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Is meditation conducive to mental well-being for adolescents? An integrative review for mental health nursing

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ABSTRACT

Childhood mental health problems not only incur a financial burden but more importantly damages individual and family well-being, which compels mental care practitioners to search for solutions, among which meditation is a more economical method. This integrative review investigates the effectiveness of meditation on psychological problems for adolescents under age of 20 through different types of meditation, though mainly mindfulness-based modes. The 36 reviewed publications include quantitative, qualitative and mixed methods research, conducted in North America, Europe, and the Asia Pacific region, related to developmental disabilities, emotional problems, and mental illnesses. Outcomes indicate a decrease in self-harm thoughts, disruptive behaviour, stress, anxiety, impulsivity, and psychological distress; and improvements in self-control, quality of sleep, emotional regulation, executive function, anger management, and social competence, resulting in better academic performance, quality of life, mental wellness, and child-parent relationships. This review suggests the integration of meditation into physical activities, and music and art therapies, as well as randomised controlled trials to examine such synthesis of these disciplines. In conclusion, meditation is a potential curative and preventive measure, both low cost and non-intrusive, for the promotion of adolescent mental wellness. This sheds light on nurses who look after children with mental health.

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1. Introduction

A survey (Chisholm, 2013) reports that more than 10% of global health costs are related to mental illnesses, including expenses associated with childhood mental health. Over 10% of adolescents around the world suffer from mental disorders, including emotional problems, disruptive behaviours and developmental disabilities; half of patients with mental illnesses first shown signs of illness by age 14, and 75% by their mid-20 s (World Health Organisation., 2014). This issue creates a heavy burden for many countries and exerts an urgent need to develop childhood mental care services (Patel, Kieling, Maulik, & Divan, 2013), to which nurses in mental health for children also pay attention.

In order to reduce such tremendous public health expenditures, policy makers seek to acquire low cost solutions, among which meditation, as a complementary and alternative medicine (van der Watt, Laugharne, & Janca, 2008), has increasingly been used (Bonadonna, 2003) in the form of mind-body therapy (Barnes, Bloom, & Nahin, 2008). Research outcomes report the effectiveness of meditation on mental illnesses (Welwood, 1980) such as anorexia (Engler, 1984), anxiety (Delmonte, 1985), and stress (Loizzo, 2000).

Among the various types of meditation, mindfulness, a mind-body approach (Halliwell, undated) rooted in Buddhism (Keune & Forintos, 2010), has attracted particular attention in the mental care field. Mindfulness is "optimally cultivated through meditation" (Kabat-Zinn, 2014b, p. 342), indicating the connection between mindfulness and meditation (Boellinghaus, Jones, & Hutton, 2014). It has been widely adopted in psychotherapeutic settings as a technique (Myint, 2010) which is capable of achieving mental well-being (Roche, Haar, & Luthans, 2014); for example, acceptance and commitment therapy (Kocovski, Fleming, & Rector, 2009), cognitive behavioural therapy (Hamilton, Kitzman, & Guyotte, 2006), and dialectical behavioural therapy (Soler et al., 2012).

Mindfulness-based approaches have been incorporated into treatments for various challenges, including cancer recurrence (Thornton et al., 2014), post-traumatic stress disorder (Kalill, Treanor, & Roemer, 2014), bipolar disorder (Perich, Manicavasagar, Mitchell, & Ball, 2015), and life difficulties (Yeary, 2013). They also apply to different specific groups, such as adults with Williams syndrome (Miodrag, Lense, & Dykens, 2013), university students suffering from study stress (de Vibe et al., 2013), and survivors of childhood trauma (Kimbrough, Magyari, Langenberg, Chesney, & Berman, 2010; Lord, 2013; Michal et al., 2007; Perona-Garcelan et al., 2014).

Also, mindfulness-related treatments are effective for adolescents (Harnett & Dawe, 2012; Langer, Cohen, & Djikic, 2012) with different mental problems, including, stress (Smith & Womack, 1987), test anxiety (Cunha & Paiva, 2012), eating disorders (Godsey, 2013), and Asperger's syndrome (Russell, 2011). Practising mindfulness-based meditation results in better and more accurate memory (Hammond, Wagstaff, & Cole, 2006), inhibitory control (Oberle, Schonert-Reichl, Lawlor, & Thomson, 2012), and resilience (Meiklejohn et al., 2012). Thus, such interventions are suggested for utilisation as a potential tool for treating children (Burke, 2010; Sharma, 2014), including those with developmental disabilities (Hastings & Manikam, 2013).

In spite of recent reviews (Burke, 2010; Sharma, 2014) attaining positive indicators of meditation in mental care programmes, these reviews have focused only on mindfulness-related treatments, resulting in a paucity of reviews on other meditation approaches. The present integrative review looks into the effects of meditation-oriented therapies on adolescent mental wellness, offering more alternatives for researchers, practitioners and clients to cope with psychological problems and promote mental health.

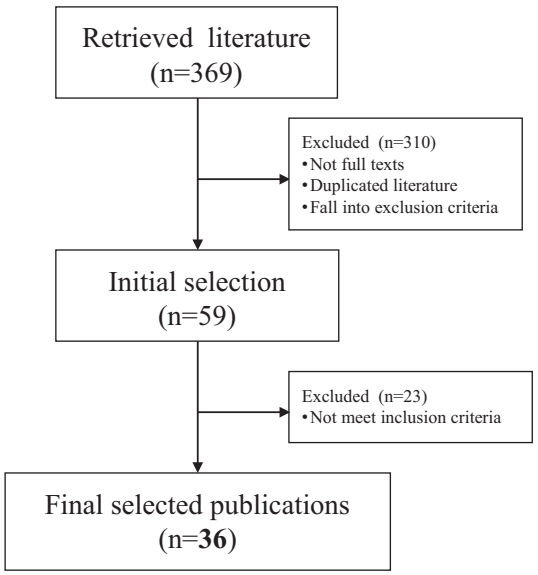

Fig. 1. Selection Procedures.

Its result aims at gaining insight into nurses in mental health, in particular, for those who take care of children affected by mental disorders.

2. Research method

2.1. Search strategy

This integrative review searched 58 major databases in ProQuest, including British Nursing Index, ERIC, MEDLINE, PILOTS, PsycARTICLES, and PsycINFO, selecting the check boxes labelled "peer reviewed" and "scholarly journals". By inputting "child* or adolescen* or youth" and "meditation or mindfulness" into the "document title" field in order to target relevant papers, 74 publications were listed, as well as 295 pieces with "identifier", totalling 369 works.

2.2. Eligibility criteria

The inclusion criteria included first, papers which are published before July 2014, including Online First publications; second, empirical studies, covering quantitative research and qualitative enquiries; and lastly, different forms of meditation. However, this review excluded dissertations, conference papers, case reports, letters, book reviews, literature reviews, research notes, editorials and commentaries.

2.3. Selection procedures

The listed 369 publications were skimmed through ruling out duplications and those in the exclusion criteria. The remaining 59 full texts then underwent a second screening through examination of abstracts, resulting in the retrieval of 36 empirical investigations (refer to Fig. 1) which were analysed for their themes, target participants, research design, and outcomes.

3. Results

The 36 reviewed papers involved 3115 adolescents aged 7–19 years in North America (USA and Canada), Europe (The Nether-

Table 1
Analysis of the 27 Reviewed Quantitative Studies.

Source	Theme	Method design			Results in the intervention group
		Sample size	Data collection	Intervention design	
Britton et al. (2014)	Mental health	101 students in two at 6th grade classes. (female = 46, male = 55)	A randomised controlled trial. 2 intervention classes and 2 control classes (unspecified number of students in each class and gender ratio). Measurements: Youth Self Report, Spielberger State-Trait Anxiety Inventory, and Cognitive and Affective Mindfulness Measure-Revised	Mindfulness training. 3–5 min class-based practice, 4–5 times a week, 6 weeks	Less suicidal ideation and self-harm thoughts in the intervention group than in the control group
Parker et al. (2014)	Substance abuse	111 elementary students aged 9–11 in 2 schools. (female = 64, male = 47)	A randomised controlled trial. 71 students were randomly assigned to the intervention group (female = 41, male = 30) and 40 to the control group (female = 23, male = 17). Measurements: Intentions to Use Alcohol and Tobacco Scale, and Children's Behaviour Checklist-Teachers Report Form. Pre- and post-testing	Mindfulness meditation. 15 min per day, 20 consecutive days, 4 weeks	Improvements in executive functioning and self-regulatory abilities (both genders). An increase in self control abilities (boys only). A reduction in aggression behaviour (both genders) and anxiety (girls only)
Robinson, Ladd, and Anderson (2014)	Substance abuse	1051 students in grades 9–12. (female = 515, male = 536)	A cross-sectional design. Measurements: UPPS Impulsivity Scale-Revised, Positive Urgency Measure, and Child and Adolescent Mindfulness Measure	No details regarding mindfulness training	An inverse correlation of mindfulness and urgency. A higher level of mindfulness in boys
van de Weijer-Bergsma, Langenberg, Brandsma, Oort, and Bögels (2014)	Stress-related problems	199 children aged 8-12 years. (female = 111, male = 88) 120 parents	An experimental design with a waitlist group. 95 randomly assigned to the intervention group (4 classes) and 104 to the control group (4 classes). Measurements: Non-Productive Thoughts Questionnaire for Children, Emotion Awareness Questionnaire revised, Sense of Coherence Questionnaire for Children, Subjective Happiness Scale, Screen for Child Anxiety Related Emotional Disorders, Social Competence and Behaviour Evaluation, Sleep Disturbance Scale for Children, and School as a Caring Community Profile II. Measured at the baseline, pre-test, post-test and follow-up	MindfulKids (a mindfulness intervention). 30 min per session, twice a week, 6 weeks	A reduction in stress. An increase in mental well-being
Bei et al. (2013)	Quality of sleep	62 girls aged 13–15 years	Measurements: Pittsburgh Sleep Quality Index, Spence Children's Anxiety Scale, and 7-day actigraphy. Pre- and post-testing	Mindfulness-based cognitive therapy. 20 min per session, 6 group-based weekly sessions. 2 weeks of home-based practice between the 4th and 5th sessions	Improvements in objective and subjective sleep quality. A decrease in stress and anxiety
Carboni, Roach, and Federick (2013)	Attention deficit hyperactivity disorders	4 boys aged 8 years	A multiple baseline design. 2-week follow-up. Measurements: Attention Problems and Hyperactivity Scales of Behaviour Assessment System for Children, 2nd edition. Pre- and post-testing	Mindfulness training. 30–45 min per session, twice a week (3–17 sessions)	An increase in attention regulation. A decrease in hyperactive behaviour

(*continued on next page*)

Table 1 (*continued*)

Source	Theme	Method design			Results in the intervention group
		Sample size	Data collection	Intervention design	
Malboeuf-Hurtubise, Sultan, and Vadnais (2013)	Psychological health	28 adolescents with cancer aged 11–18 years. (unspecified gender ratio)	A prospective, longitudinal, experimental design. Randomly assigned to intervention and control groups. Measurements: Beck Youth Inventories, Positive and Negative Affect Schedule – Child, Pediatric Cancer Quality of Life Inventory, Pittsburgh Sleep Quality Index, and Children and Adolescent Mindfulness Measure. Measured thrice: baseline, post-intervention and follow-up (6 months after intervention)	Mindfulness training. 90-min weekly sessions, 8 weeks	Improvements in quality of sleep and moods. Better quality of life
Sibinga et al., 2013	A comparison of the effects of mindfulness-based stress reduction and a health topic programme on mental health	41 boys aged 11–14 years	22 boys were randomly assigned to the mindfulness-based stress reduction group and 19 to the health topic programme. Measurements: Symptom Checklist-90R, a Respironics, Mini Mitter Actiwatch, wrist actigraph, a Salivette device, an FDA-approved enzyme immunoassay. Measured at the baseline, post-intervention and 3-month follow-up	Mindfulness-based stress reduction. 50 min per session, 12 sessions	A decrease in anxiety and rumination, and improvements in coping in the mindfulness-based stress reduction group, reflecting improved mental and social health
Yoo and Lee (2013)	Mental health promotion	50 3rd grade students (female = 26, male = 24)	A quasi-experimental study. 25 students were randomly assigned to the experimental group (female = 13, male = 12) and 25 to the control group (female = 13, male = 12). Measurements: children's self-esteem inventory of Coopersmith, self-esteem scale developed by Choi and Joen, and behaviour rating scale of Long and Henderson. Pre- and post-testing	Maum meditation. 30 min per session, twice a week, 15 weeks	Improvements in school adjustment with better interpersonal relationships. An increase in self-esteem
Coholic et al. (2012)	Adolescents' resilience	25 children aged 8-14 years. (female = 15, male = 10)	Participants were grouped into the Holistic Arts-based Group Programme (arts-based mindfulness training), Arts and Crafts Programme, and the waitlist group in different time periods over 42 weeks. Measurements: Piers-Harris Children's Self-Concept Scale, and Resiliency Scales for Children and Adolescents	An arts-based mindfulness programme. 12-week programme. (unspecified session duration and frequency)	Lower emotional reactivity. No significant indicators in improving self-concepts
Haydicky, Wiener, Badali, Milligan, and Ducharme (2012)	Learning difficulties and attention deficit hyperactivity disorders	49 adolescents with learning difficulties, co-occurring attention deficit hyperactivity disorders aged 12–18. (unspecified gender ratio)	21 adolescents were randomly assigned to the intervention group and 28 to the control group. Measurements: Wechsler Abbreviated Scale of Intelligence, Woodcock–Johnson Tests of Achievement, Vocabulary and Matrix Reasoning, Conners' Scales, Behaviour Rating Inventory of Executive Function-Parent Form, Child Behaviour	Integra Mindfulness Martial Arts. 90-min weekly sessions, 20 weeks. A mixture of cognitive-behavioural therapy, mindfulness (sitting and walking meditation) and martial arts	Significant improvements in cognitive, academic and social development, and executive functioning. A reduction in anxiety and externalising problems

Table 1 (*continued*)

Source	Theme	Method design			Results in the intervention group
		Sample size	Data collection	Intervention design	
			Checklist, and Youth Self-Report. Pre- and post-testing		
van de Weijer-Bergsma, Formsma, de Bruin, and Bogels and (2012)	Attention deficit hyperactivity disorder	10 adolescents aged 11–15 years. (female = 5, male = 5), 15 parents (female = 8, male = 7) and 7 tutors	A non-controlled pre-post-follow-up design. Measurements: Youth Self Report (YSR), Child Behaviour Checklist (CBCL), the Teacher Report Form, Behaviour Rating Inventory of Executive Function, Mindful Attention and Awareness Scale, Parenting Stress Index-short version, Parenting Scale, Flinders Fatigue Scale, Subjective Happiness Scale, and Amsterdam Neuropsychological Tasks. Measured prior to training, and at the 8th week and the 16th week after intervention	Mindfulness training. 90 min per session, 8 weeks for children. 8 weeks for mindful parenting training. A child-parent joint session after 8 weeks of intervention	An increase in attention, self-awareness, self-control and executive functioning. A decrease in parental stress
van der Oord, Bogels, and Peijnenburg (2012)	Attention deficit hyperactivity disorder and mindful parenting	18 children aged 8–12 years (female = 5, male = 13) and 22 parents (female = 21, male = 1)	A quasi-experimental within-group waiting list design. Measurements: DSM-IV, Anxiety Disorder Interview Schedule for Children, Disruptive Behaviour Disorder Rating Scale, Parenting Stress Index, Parenting Scale, Mindfulness Attention and Awareness Scale, and ADHD Rating Scale. Pre- and post-testing	Mindfulness-Based Cognitive Therapy and Mindfulness-Based Stress Reduction Training. 90 min group session, 8 intervention weeks and 8 follow-up weeks. 8 sessions for parents and another 8 sessions for children	A significant reduction in inattention and over-reactive parental stress
Elder et al. (2011)	Mental health	106 ethnic minority students. (unspecified age range and gender ratio)	A quasi-experimental design. 68 participants in the meditation group and 38 in the control group. Measurements: Strengths and Difficulties Questionnaire, Spielberger State-Trait Anxiety Inventory, and Mental Health Inventory. Pre- and post-testing	7-step transcendental meditation. 10–15 min per home-based practice of 7-step transcendental meditation, twice a day, 4 months	A reduction in depressive and stress symptoms. An increase in psychological stress and mental health indicators
Flook et al. (2010)	To assess children's executive functions	64 children aged 7–9 (female = 39, male = 25)	A randomised control trial. 32 children in the intervention group and 32 in the control group. Measurements: Behaviour Rating Inventory of Executive Function. Pre- and post-testing	Mindful Awareness Practices. 30 min (8 min meditation) per session, twice a week, 8 weeks	Significant improvements in behavioural regulation, meta-cognition, and executive control
Joyce, Etty-Leal, Zazryn, Hamilton, and Hassed (2010)	Mental health	175 students aged 10–13 from 2 schools. (female = 76, male = 99)	Measurements: Strengths and Difficulties Questionnaire, Children's Depression Inventory. Pre- and post-testing	Mindfulness meditation. 45 min per weekly session, 10 weeks. Conducted by school teachers who received mindfulness training	Improvements in psychological health among the groups of students who were in the "borderline" and "abnormal" categories
Liehr and Diaz (2010)	A comparison between a mindfulness intervention programme and a health education intervention programme	17 ethnic minority children. (female = 5, male = 12) (unspecified age range)	Measurements: Short Mood and Feelings Questionnaire, and State Anxiety Inventory for Children. Pre- and post-posting	A mindfulness intervention. 15 min per session, 5 times per week, 2 weeks	A reduction in depressive and anxiety symptoms
Schonert-Reichl and Lawlor (2010)	Social and emotional competence	246 students at grades 4–7	A quasi-experimental design. 139 students in the intervention group (female = 69, male = 70 boys, and 107 in the control	Mindfulness Education. 3 min per mindfulness training, thrice a day, 10 weeks	An increase in optimism and social competence

(*continued on next page*)

Table 1 (*continued*)

Source	Theme	Method design			Results in the intervention group
		Sample size	Data collection	Intervention design	
			group (female = 50, male = 57). Measurements: Resiliency Inventory, Self-Description Questionnaire, Positive and Negative Affect Schedule, and Teachers' Rating Scale of Social Competence. Pre- and post-testing		
Semple et al. (2010)	Attention ability, anxiety and behaviour	20 children aged 9–13 who showed indicators of stress or anxiety. (female = 12, male = 8)	A randomised controlled trial. A randomised cross-lagged design provided a wait-listed control group, a second trial of the MBCT-C, and a 3-month follow-up of children who completed the first trial. Pre-, post- and follow-up-testing. Measurements: Child Behaviour Checklist, State-Trait Anxiety Inventory for Children, and Multidimensional Anxiety Scale for Children	Mindfulness-based cognitive therapy. 90 min of group mindfulness-based cognitive training per week, 12 weeks. Brief daily home practice	A reduction of attention and behaviour problems. Likely improvements in anxiety symptoms. No significant indicators related to the age of children or gender differences. Improvement maintained at the follow up period of 3 months. Beneficial to children with attention deficit hyperactivity disorder
Biegel et al. (2009)	Stress-related psychological symptoms	74 outpatients aged 14–18 years. (unspecified gender ratio)	A randomised controlled trial. Pre-, post- and 3-month follow-up testing. Measurements: Reasons for Ending Treatment Questionnaire, Perceived Stress Scale, Hopkins Symptom Checklist 90, Rosenberg Self-Esteem Scale, and mindfulness practice diaries	Mindfulness-based stress reduction. 2 hours per week, 8 weeks. Weekly in-class training and 20–35 min home practice	A decrease in anxiety, depression and somatic distress. An increase in self-esteem and quality of sleep. Significant indicators from the 5th week of the intervention. A decline in interpersonal problems and obsessive symptoms
Catani et al. (2009)	A comparison of meditation-relaxation and narrative exposure therapy on post-traumatic stress disorder	31 children with post-traumatic stress disorder aged 8–14 years. (female = 14, male = 17)	15 participants were randomly assigned to the meditation-relaxation group (female = 8, male = 7) and 16 to the narrative exposure therapy group (female = 6, male = 10). Follow-up after 6 months Measurement: DSM-IV. Pre- and post-testing, and follow-up evaluation	Meditation-relaxation. 60–90 min per session, 6 sessions, 2 weeks	Recovery rate: 81% in the narrative exposure therapy group, 71% in the meditation-relaxation group
Bogels, Hoogstad, van Dun, de Schutter, and Restifo (2008)	Externalising disorders (attention deficit hyperactivity disorder, oppositional-defiant and/or conduct disorder, and autism spectrum disorder	14 adolescents aged 11–18 years (female = 6, male = 8) with 6 mothers, 4 fathers and 2 pair of parents	A quasi-experimental within-subject waitlist design. Measurements: Goal Attainment Scale, Child Behaviour Checklist, Youth Self Report, Children's Social Behaviour Questionnaire, Self Control Rating Scale, Subjective Happiness Scale, Paediatric Quality of Life Inventory, and Mindful Attention and Awareness Scale. Pre- and post-testing	Mindfulness-based cognitive therapy. 90 min per session, 8 intervention weeks and 8 follow-up weeks. Parallel child and parent groups	Improvements in attention problems, impulsivity, self-control, internalising and externalising complaints
Zylowska et al. (2008)	Attention deficit hyperactivity disorder symptoms, cognitive processes of attention regulation, and associated symptoms of anxiety and depression	8 adolescents aged over 15 years (female = 5, male = 3) 24 adults (female = 15, male = 9)	Measurements: Schedule for Affective Disorders and Schizophrenia for School-Age Children-Present and Lifetime Version for children, and Schedule for Affective Disorders and Schizophrenia-Lifetime Version for adults. Pre- and post-testing	Mindfulness training. 5 min (weeks 1–2), 10 min (weeks 3–5) and 15 min (weeks 6–8) per session, once a week, 24 weeks, and daily home-based practice (unspecified duration)	Improvements in conflict attention and set-shifting. Adults improve depression, anxiety, attention and emotional regulation systems
Napoli et al. (2005)	Attention ability	228 students in 9 classes in 2 elementary schools (female = 108, male = 120)	114 students randomly assigned to the intervention group and 114 in the control group. Measurements: ADD-H	Attention Academy Programme (a mindfulness intervention). 24 weeks. (unspecified session	Significant improvements in attention ability

Table 1 (*continued*)

Source	Theme	Method design			Results in the intervention group
		Sample size	Data collection	Intervention design	
			Comprehensive Teacher Rating Scale, Test of Everyday Attention for Children, Test Anxiety Scale. Pre- and post-testing	duration and frequency)	
Harrison et al. (2004)	Attention deficit hyperactivity disorder	48 children with attention deficit hyperactivity disorder (unspecified ages) (female = 7, male = 41)	A clinical treatment trial. A quasi-control group made up from the waiting list children. Measurements: Conners Parent–Teacher Questionnaire, Biobehavioural Indicators of Self-Esteem questionnaire, child self-report questionnaires, Burnett self esteem questionnaire, Peabody Picture Vocabulary Test – Third edition, parent-rated questionnaires and examiner testing and interviews. Measured at the 1st, 3rd and 6th weeks	Sajaha yoga meditation. Children: 90 min per session, twice a week, 6 weeks. Parents: twice a week for home-based practice. Joint session: parent-child meditation once weekly from the 4th to 6th week	Feeling calmer, less panic and anxiety, more relaxation, better sleep quality and concentration, and improvements in social ability, confidence and involvement for children. Better child-parent relationships with fewer conflicts
Redfering and Bowman (1981)	Non-attending or disruptive behaviour of behaviourally disturbed children	18 elementary school students aged 8–11 years. (female = 4, male = 14)	9 class members were randomly assigned to the treatment group (female = 1, male = 8) and 9 to the control group (female = 3, male = 6). Pre- and post-testing	Benson meditation. 20 min per session, 5 sessions	Improvements in attention
Linden (1973)	Cognitive and affective functioning	90 students in the third grade (female = 45, male = 45)	30 students were randomly assigned to the meditation group and 60 to 2 control groups (a guidance group and a group without special attention). Measurements: Children's Embedded Figures Test, Test Anxiety Scale for Children, Metropolitan Achievement Test, Primary II, Word Knowledge Test and the Reading (Comprehension) Test. Pre- and post-testing	Meditation. 20–25 min per session, twice a week, 18 weeks	Improvements in concentration and attention

lands), and the Asia Pacific Region (Australia, Korea and Sri Lanka). These studies were published from 1973 to June 2014, most of which were from 2010 to June 2014 ($n = 25$) and from 2004 to 2009 ($n = 9$), including quantitative studies ($n = 27$) (refer to Table 1), qualitative enquiries ($n = 4$) (refer to Table 2), and mixed-method projects ($n = 5$) (refer to Table 3).

The reviewed projects contain a variety of research themes, such as general mental or psychological health ($n = 8$), attention deficit hyperactivity disorder ($n = 7$), stress ($n = 5$), and social and emotional competence ($n = 5$). Although various methods of meditation were adopted, most of the studies were related to mindfulness-based meditation ($n = 25$). Various other modes of meditation were also used, such as 7-step transcendental meditation ($n = 1$), Benson meditation ($n = 1$), Maum meditation ($n = 1$), and Sajaha yoga meditation ($n = 1$); while five other projects did not clearly declare their meditation forms.

The meditation duration periods lasted 3–15 min per session ($n = 7$), while the training sessions that were listed as being 45–120 min in length per training session ($n = 12$) did not announce their actual meditation duration. Another seven studies did not disclose their specific session durations. The most common practice frequencies were once a week ($n = 8$) and twice per week ($n = 8$), and only a few required daily practice sessions, for example twice a day ($n = 1$) and thrice a day ($n = 1$). However, thirteen investigations did not report their frequencies. The intervention periods were carried on for as short as 2 weeks ($n = 5$) and as long as 24 weeks ($n = 2$); albeit between 8 weeks ($n = 9$) and 6 weeks ($n = 4$) were the more common practices. Another four studies did not specify the investigation duration.

This review indicates that practising meditation enables children to reduce anxiety, depression, stress, rumination, suicidal ideations, self-harm thoughts, impulsivity, hyperactive behaviour, emotional reactivity, and internalising and externalising symptoms. Equally critical, it also illustrates an increase in relaxation, calmness, concentration, quality of sleep, self-esteem, optimism, resilience, attention regulation, social adjustment, and anger control. In summary, adolescents are able to attain better interpersonal relationships, quality of life, and mental well-being.

4. Discussion and practical implications

4.1. Randomised controlled trials

Despite positive outcomes showing that adolescents can achieve better mental health through practising meditation, only five studies out of the 36 reviewed papers are of a randomised controlled trial design. Britton and the team (2014) examined in what

Table 2
Analysis of the 4 Reviewed Qualitative Studies.

Source	Objective	Method design			Results in the intervention group
		Sample size	Data collection	Intervention design	
Wisner (2013)	Mental health	35 students aged 15-19 years. (female = 16, male = 19)	A qualitative research. Measurements: students journal entries and information forms. Pre- and post-report	Meditation. 2 4-min sessions, twice a week in the first 2 weeks, and 10 min each from the 6th to 8th weeks	An increase in psychosocial abilities, positive thinking, relaxation, and self-control A decrease in stress
Coholic (2011)	Mental health	50 children aged 8-15 in a child protection agency. (unclear gender ratio)	A qualitative study. 38 participants in the first 3 years in 17 6-week groups, including 11 girl groups, 6 boy groups. 4 12-week groups in the 4th year, including 8 girls and 4 boys. 31 children and 8 parents were interviewed over 3.5 years. Semi-structured interviews 2 weeks after training	An arts-based mindfulness-based group intervention. 2 hours per session, 12 weeks. (unspecified frequency)	Better emotional regulation, social skills, self-awareness, self-esteem and resilience
Singh et al. (2010)	Self-management skills	2 children with attention deficit hyperactivity disorders (10 and 12 years old) and their mothers	A qualitative study. A multiple baseline across participants design. 12-week follow-up	Mindfulness training. One child-parent pair for 4 weeks and another pair for 7 weeks. 12 sessions for children and mothers separately	Better child-mother relationship Improvements in impulsivity, inattention and hyperactivity
Campions and Rocco (2009)	Mental health	54 students aged 7-12 years (unspecified gender ratio), 19 teachers and 7 parents in 3 schools	A qualitative study. No details of research design	A school-based meditation programme. Either on a daily or weekly basis, or thrice a week in the 3 schools	Relaxation, calmness, concentration, emotion regulation, stress management, and anger control

ways children benefit from a 6-week mindfulness training programme, which included breathing, body scans, and awareness of feelings, sensations and thoughts. This class-based practice for 101 6th grade students lasted 3–5 min per session, and occurred 4–5 times a week. Compared with the two control classes, the participants in the two intervention classes reported less suicidal ideation and self-harm thoughts, due to greater calmness and less impulsivity (Williams & Swales, 2004).

Another recent research (Parker, Kupersmidt, Mathis, Scull, & Sims, 2014) used mindfulness meditation among 111 students aged 9–11 over four weeks, during which children practised meditation 15 min a day for 20 consecutive days. The outcomes reveal better control ability in boys and less anxiety in girls, potentially assisting adolescents in dealing with substance abuse, due to having better emotional regulation (Kim, 2012). Also, they indicated similar improvements in executive functioning and self-regulatory abilities, and a reduction in aggressive behaviour for both genders. These indicators complied with Flook and her team's project (2010), showing significant enhancement in behavioural regulation, meta-cognition, and executive control after an 8-week Mindful Awareness Practices programme (8-min meditation session, twice a week).

One 8-week mindfulness-based cognitive group therapy (Semple, Lee, Rosa, & Miller, 2010) studied 20 children (aged 9–13 years) with stress or anxiety decreased anxiety and behavioural problems, and demonstrated improved symptoms related to attention deficit hyperactivity disorder. This work is concordant with a mindfulness-based stress reduction programme carried out among 74 outpatients aged 14–18 years (Biegel, Brown, Shapiro, & Schubert, 2009). These children practised 2-hour stress reduction weekly in-class training for eight weeks, and 20–35 min of home practice, resulting in a decline in anxiety, depression, somatic distress, interpersonal problems, and obsessive symptoms (Hertenstein et al., 2012).

4.2. An In-depth understanding

In further regard to the quantitative research, including the randomised controlled trials as elaborated on previously, the four qualitative studies (refer to Table 2) and the five mixed-method works (refer to Table 3) explored the lived experiences of participants regarding their perception of meditation training and how it helped them improve their social skills. Meditation, however, is not necessarily suitable for everyone (Mikulas, 1978; Tart, 1990a). In particular, children's preferences (Wisner, 2013) and concentration abilities (Engler, 1983) vary, producing difficulties for such training (Fodor & Hooker, 2008). In addition to these personal concerns, meditation instructions carry a significant role (van Aalderen, Breukers, Reuzel, & Speckens, 2014) in safe and effective training.

Mindfulness-based meditation presents 71% of the modes of chosen among the diverse meditations seen in this integrative review, probably due to the fact that mindfulness training has been manualised (Bear, 2003; Kristeller, Wolever, & Sheets, 2014; Stanley et al., 2006). This standardisation reduces training risks, not only for adolescents but also for instructors and researchers, thus increasing research reliability. Nevertheless, qualitative studies are proposed so as to collect individual data in order to enhance these training programmes (Campions & Rocco, 2009).

4.3. Child-parent relationships

Parents who look after children with developmental disabilities suffer greatly from stress, as indicated in the reviewed literature.

Table 3
Analysis of the 5 Reviewed Mixed-Method Studies.

Source	Objective	Method design			Results in the intervention group
		Sample size	Data collection	Intervention design	
Ames, Richardson, Payne, Smith, and Leigh (2014)	Prevention of depression relapse	7 female adolescents aged 12–18, with residual symptoms of depression	A mixed-method design. Interpretive phenomenological analysis for qualitative data, and assessing acceptability. Measurements: (assessing efficacy) Moods and Feelings Questionnaire, Child Response Style Questionnaire, Penn State Worry Questionnaire, Child Acceptance and Mindfulness Measure, Paediatric Quality of Life Enjoyment and Satisfaction Questionnaire, and Strengths and Difficulties Questionnaire	Mindfulness-based cognitive therapy. 8 weeks. A group setting. (unspecified session duration and frequency)	A reduction of depressive symptoms and rumination. Positive change in mindfulness-skill, quality of life. Qualitative: "mindfulness helps" ("increased awareness", "relating differently to thoughts, feelings", and "using mindfulness when distressed") and "group experience" ("working it out together", "formal meditation versus simple sensory exercises", and "keeping mindfulness going")
Tan and Martin (2012)	Mental health	9 adolescents aged 14–17 years. (female = 6, male = 3)	A mixed-method design. A single group, longitudinal design. Quantitative measures and a structured open-end questionnaire. Measurements: Depression Anxiety Stress Scale, Rosenberg Self-Esteem Scale, Children's Acceptance and Mindfulness Measure, Avoidance and Fusion Questionnaire for Youth, weekly homework logs, and Child Behaviour Checklist. Pre- and post-testing	Mindfulness-based interventions. 5 intervention weeks, and 8 follow-up weeks. No details of the duration of the mindfulness training sessions	An increase in self-esteem and adolescents' functioning. A decrease in psychological distress
Himelstein (2011)	Substance abuse	48 male incarcerated youth aged 15–18 years	A mixed-method design. Measurements: Monitoring the Future questionnaire, Teen Conflict Survey Impulsiveness scale, and Healthy Self-Regulation (HSR) scale. Pre- and post-testing. 16 participants for 2 focus group interviews after intervention	90 min per session, once a week, 8 weeks. (unspecified meditation duration)	A decrease in impulsiveness
Lee, Semple, Rosa, and Miller (2008)	Internalising and externalising symptoms	17 children 9–12 years old. (female = 9, male = 8)	A mixed-method design. 2-phase open trial design. 3-time assessment: pre-, post-, and one-tailed dependent *t* tests. Measurements: (quantitative) Child Behaviour Checklist: Parent Report Form, Multidimensional Anxiety Scale for Children, State-Trait Anxiety Inventory for Children, Reynolds Child Depression Scale. (qualitative) a 10 open-ended questionnaire, and Parent Evaluation and Questionnaire. Home practice record.	Mindfulness-based cognitive training. 90 min per weekly session, 12 weeks. Home practice: 15 min per day, 6 times a week	A reduction of internalising and externalising symptoms
Semple, Reid, and Miller (2005)	Paediatric anxiety disorders	5 anxious children aged 7–8. (female = 2, male = 3)	A mixed-method design includes clinical measurements and observations. Measurements: Child Behaviour Checklist, and Feely Faces Scales. Pre- and post-testing	Mindfulness meditation. 45 min weekly school-based session, 6 weeks	Improvements in inattention, internalising and externalising problems

Meditation training improves impulsivity, self-control, sleep quality and internalising and externalising complaints for children who are equipped with self-awareness, confidence, attention ability, and better executive function. Meanwhile, mindful parenting reduces stress and anxiety, and ameliorates emotional regulation, suggesting that such interventions can also help parents who take care of children with mental disorders (Benn, Akiva, & Arel, 2012; Conner & White, 2014) or emotional problems (Hwang & Kearney, 2014; Neece, 2014).

This review observes improvements in child-parent relationships, since children are able to enhance their psychosocial skills and parents can lessen over-reactive tension. Therefore, joint meditation programmes should likely be offered for both parties (Williams-Orlando, 2013), as an alternative for family therapy (Harrison, Manocha, & Rubia, 2004).

4.4. Integrating mindfulness-based interventions with other activities

Mindfulness-based meditation reveals itself as a dominant measure in this integrative review, and contributes to mental health for adolescents. Mindfulness refers to "an openhearted, moment-to-moment, non-judgemental awareness" (Kabat-Zinn, 2014b, p. 342), and possibly incorporates with other activities as well (Fodor & Hooker, 2008); for instance, in play groups and physical education (Napoli, Krech, & Holley, 2005). Physical activities benefit children in their emotional regulation (Wiles et al., 2008),

well-being (Iannotti et al., 2009; Ussher, Owen, Cook, & Whincup, 2007), better attention in autism (MacDonald, Esposito, & Ulrich, 2011; Pan, Tsai, & Hsieh, 2011; Tan, Cohen, & Pooley, 2013), and a reduction in obesity (Srinivasan, Pescatello, & Bhat, 2014), attention deficit hyperactivity disorder (van van Egmond-Frohlich, Weghuber, & de Zwaan, 2012), and depression (Rothon et al., 2010; Wiles, Haase, Lawlor, Ness, & Lewis, 2012).

A combination of playful and creative activities (Williams-Orlando, 2013) with mindfulness very likely attracts children who participate in martial arts, Tai Chi (Wall, 2005; Wall, 2008), yoga (Noggle, Steiner, Minami, & Khalsa, 2012; White, 2012), and play therapy in regard to attention deficit hyperactivity disorder (Green, Drewes, & Kominski, 2013; Portrie-Bethke, Hill, & Bethke, 2009; Ray, Schottelkorb, & Tsai, 2007), anxiety (Post, 1999), autism (Bromfield, 1989), and obsessive-compulsive disorder (Gold-Steinberg & Logan, 1999; Myrick & Green, 2012). The concept of mindfulness can also be used in dance therapy, which is known to be effective on autism (Freundlich, Pike, & Schwartz, 1989), and emotional regulation (Betty, 2013).

Mindfully singing or playing musical instruments can possibly be assimilated into music therapy, through its effects on attention deficit hyperactivity disorder (Jackson, 2003; Rickson, 2006), autism (Geretsegger, Holck, & Gold, 2012; Kern & Aldridge, 2006; Reschke-Hernández, 2011; Thompson, 2012; Wimpory & Nash, 1999), and anxiety (Goldbeck & Ellerkamp, 2012). Music teachers trained with mindfulness skills are also able to make music classes more enjoyable.

Mindfulness-based interventions can likewise be infused into art therapy, which shows positive indicators related to attention deficit hyperactivity disorder (Henley, 1998) and autism (Durrani, 2014; Epp, 2008), forming art-based meditation (Coholic, Eys, & Lougheed, 2012; Coholic, 2011). This synthesis would further extend the versatility of art therapists.

4.5. Adaptation in daily life

Practice quality is more important than quantity (Goldberg, Re, Hoyt, & Davis, 2014), and this also applies to meditation. Whereas children's concentration levels are comparatively shorter, shorter durations per meditation session are therefore proposed. Breaking a session into shorter slices is another feasible arrangement, which strengthens adolescents' concentration.

Furthermore, it is recommended that mindfulness be merged with daily activities (Keune & Forintos, 2010; Semple, Reid, & Miller, 2005; Tart, 1990b), including eating, reading, walking, and sports (Kabat-Zinn, 2005). It can also become routinised (Kabat-Zinn, 2014a) as a daily practice in order to achieve continued effectiveness.

4.6. Practical implications for nurses

The outcomes and discussion of this integrative review indicate practical implications for nurses who look after children, particularly children with emotion disorders. First, this study proposes that nurses in mental health will receive meditation training from which they are able to assist in training their clients. This likely builds nurse-patient relationship in order to provide better services. Next, nurses may help parents to learn meditation, resulting in lowering stress of parents who tackle children with mental illnesses and gaining parenting skills. Improved parent-children relationship benefits both parties in a long term. Third, nurses may work with other kinds of therapists to provide services more effectively and efficiently, such as occupational therapists, music therapists, and art therapists. Finally, nurses also can enhance their mental well-being through practising meditation. These recommendations may offer references to management of nursing schools to review nursing curricula and career development programmes.

4.7. Limitations and directions for future studies

The number of randomised controlled trials is insufficient in the reviewed literature, resulting in inconclusive outcomes, even though they do illustrate promising indicators. Moreover, sample sizes are relatively small, being as restricted as four participants in one quantitative study. These imply research gaps for further evidence-based exploration.

Moreover, the reviewed studies were conducted in North America, Europe, and the Asia Pacific region. African mental care professionals may find opportunities to develop cost-effective interventions on a regional basis.

5. Conclusion

This integrative review examines the effectiveness of meditation on the mental health of adolescents. Positive outcomes in these 36 reviewed projects include not only a decrease in stress, anxiety, impulsivity, self-harm thoughts, disruptive behaviour, and psychological distress; but also improvements in emotional regulation, executive function, anger management, self-control, sleep quality, and social competence. As a result, these children attained better academic performance, quality of life, mental wellness, and equally as important, in child-parent relationships. Meditation, as a non-medicinal and low cost measure, is thus recommended for preventive and curative purposes, for adolescent mental health promotion. This review suggests that nurses in childhood mental health equip themselves with meditation skills in order to better serve their clients and work with other therapists.

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